IV SEM MTECH (CE)

SEM IV Year 2014-15

<table>
<thead>
<tr>
<th>Course Title: Arm Processors</th>
<th>Course Code: 14SCE41</th>
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</thead>
<tbody>
<tr>
<td>Credits(L:T:P):3:0:1</td>
<td>Core/Elective: Core</td>
</tr>
<tr>
<td>Type of Course: Lecture &amp; Practical</td>
<td>Total Contact Hours:50</td>
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COURSE OBJECTIVES

- Describe the programmer’s model of ARM processor and create and test assembly level programming.
- Analyze various types of coprocessors and design suitable co-processor interface to ARM processor.
- Analyze floating point processor architecture and its architectural support for higher level language.
- Become aware of the Thumb mode of operation of ARM.
- Identify the architectural support of ARM for operating system and analyze the function of memory Management unit of ARM.

TOPICS:

MODULE I

MODULE II
ARM Assembly Language Programming: Data processing instructions. Data transfer instructions. Control flow instructions. Writing simple assembly language programs. ARM Organization and Implementation: 3-stage pipeline ARM organization. 5-stage pipeline ARM organization. ARM instruction execution. ARM implementation. The ARM coprocessor interface. 10 Hours

MODULE III

MODULE IV
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10 Hours

**MODULE V**

**ARM Processor Cores:** ARM7TDMI. ARM8. ARM9TDMI. ARM10TDMI


10 Hours

**ARM LABORATORY EXPERIMENTS**

Carryout the following experiments using keil micro vision 4 software/ Equivalent tool.

1. Write a program to interface LCD to ARM kit.
2. Write a program to (a) copy a string from source to destination (b) Reverse a string.
3. Write a program to multiply two matrices with and without MLA instruction.
4. Write a program to scan the keypad, assign own values to the keys and display the key pressed.
5. Write a program to open a file and using fork system call create a child process. Let both the parent and child process write to the same file. Check the output of the file.
6. Write a program to communicate between two processes using (a) PIPE (b) FIFO.
7. Write a program to synchronize shared memory usage using Semaphore.
8. (a) Write a simple program to create three threads.
   (b) Perform 3x3 matrices addition using threads.

**COURSE OUTCOMES:**

The students shall able to:

- Understand the hardware and software issues related to the design of a Microcontroller based system catering to the needs of medium and higher end applications.
- Understand the architecture and programming of the 32-bit ARM Cortex Processors

**Text Book:**


**Reference Book.**

Course Title: Wireless Ad-hoc Networks  

<table>
<thead>
<tr>
<th>Credits(L:T:P)</th>
<th>Core/Elective</th>
<th>Type of Course:</th>
<th>Total Contact Hours</th>
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<tbody>
<tr>
<td>4:0:0</td>
<td>Elective</td>
<td>Lecture</td>
<td>50</td>
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Course Objective:
- To understand fundamental principles of Ad-hoc Networks
- To develop a comprehensive understanding of Ad-hoc network protocols
- To understand current and emerging trends in Ad-hoc Wireless Networks.
- To understand energy management in ad-hoc wireless networks.

TOPICS:

MODULE I
10 Hours

MODULE II
Routing Protocols for Ad-hoc Wireless Networks  Introduction, Issues in Designing a Routing Protocol for Ad-hoc Wireless Networks; Classification of Routing Protocols; Table Driven Routing Protocols; On-Demand Routing Protocols, Hybrid Routing Protocols, Hierarchical Routing Protocols and Power-Aware Routing Protocols (Chapter 7: 7.1-7.6, 7.8, 7.9)  
10 Hours

MODULE III
10 Hours

MODULE IV
10 Hours
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MODULE V


Course Outcome:
The students shall able to:
- Design their own wireless network
- Evaluate the existing network and improve its quality of service

TEXT BOOKS:

REFERENCES:
IV SEM MTECH (CE)

SEM IV  
Year 2014-15

<table>
<thead>
<tr>
<th>Course Title: Wireless Sensor Networks</th>
<th>Course Code: 14SCE422</th>
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<tr>
<td>Credits(L:T:P): 4:0:0</td>
<td>Core/Elective: Elective</td>
</tr>
<tr>
<td>Type of Course: Lecture</td>
<td>Total Contact Hours: 50</td>
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COURSE OBJECTIVES

- Architect sensor networks for various application setups.
- Explore the design space and conduct trade-off analysis between performance and resources.
- Assess coverage and conduct node deployment planning.
- Devise appropriate data dissemination protocols and model links cost.
- Determine suitable medium access protocols and radio hardware.
- Prototype sensor networks using commercial components.
- Provision quality of service, fault-tolerance, security and other dependability requirements while coping with resource constraints.

TOPICS:

MODULE I
Introduction, Overview and Applications of Wireless Sensor Networks
Introduction, Basic overview of the Technology, Applications of Wireless Sensor Networks: Introduction, Background, Range of Applications, Examples of Category 2 WSN Applications, Examples of Category 1 WSN Applications, Another Taxonomy of WSN Technology
(Chapter 1: 1.1, 1.2, Chapter 2: 2.1-2.6) 10 Hours

MODULE II

MODULE III
MAC and Routing Protocols for Wireless Sensor Networks:
Introduction, Background, Fundamentals of MAC Protocols, MAC Protocols for WSNs, Sensor-MAC case Study, IEEE 802.15.4 LR-WPANs Standard Case Study. Routing Protocols for Wireless Sensor Networks: Introduction, Background, Data Dissemination and Gathering, Routing Challenges and Design Issues in WSNs, Routing Strategies in WSNs. (Chapter 5: 5.1-5.6, Chapter 6: 6.1-6.5) 10 Hours

MODULE IV
IV SEM MTECH (CE)

MODULE V

COURSE OUTCOMES
The students shall able to:
- Existing applications of wireless sensor actuator networks
- Elements of distributed computing and network protocol design and will learn to apply these principles in the context of wireless sensor networks
- Various hardware, software platforms that exist for sensor networks
- Overview of the various network level protocols for MAC, routing, time synchronization, aggregation, consensus and distributed tracking

TEXT BOOK:

REFERENCE BOOKS:
IV SEM MTECH (CE)

SEM IV Year 2014-15

<table>
<thead>
<tr>
<th>Course Title: Optical Networks</th>
<th>Course Code: 14SCE423</th>
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<td>Credits(L:T:P):4:0:0</td>
<td>Core/Elective: Elective</td>
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<tr>
<td>Type of Course: Lecture</td>
<td>Total Contact Hours:50</td>
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Course Objectives:
- To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures
- To understand the different kind of losses, signal distortion in optical wave guides and other signal degradation factors
- To learn the various optical source materials, LED structures, quantum efficiency, and Laser diodes
- To learn the fiber optical receivers such as PIN APD diodes, noise performance in photo detector, receiver operation and configuration
- To learn the fiber optical network components, variety of networking aspects, FDDI, SONET/SDH and operational principles WDM

TOPICS:
MODULE I

MODULE II
WDM Network Elements: Optical Line Terminals, Optical Line Amplifiers, Optical Add/Drop Multiplexers: OADM Architectures, Reconfigurable OADMs Optical Cross connects: All-Optical OXC Configurations. 10 Hours

MODULE III

MODULE IV
IV SEM MTECH (CE)


10 Hours

MODULE V


10 Hours

Course Outcomes:
The students shall able to:
- Gain Knowledge on fundamentals of optical network.
- Explore optical network architectures ranging from optical access networks to backbone optical transport networks.
- Choose approaches and methodologies of optical network for design effective optimization;
- Apply Techniques of optical network survivability.
- Gain knowledge on Problem solving skills and critical thinking in the discipline of optical networks.

TEXT BOOK:

References:
IV SEM MTECH (CE)

SEM IV           Year 2014-15

<table>
<thead>
<tr>
<th>Course Title: Enterprise Application Programming</th>
<th>Course Code: 14SCE424</th>
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<td>Credits(L:T:P):4:0:0</td>
<td>Core/Elective: Elective</td>
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<td>Total Contact Hours:50</td>
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COURSE OBJECTIVES:
- To gain knowledge about metrics Web Application Development and related terminologies
- To gain knowledge about persistent framework and other ORM tools.
- To learn to build solutions using Design Patterns
- To get introduced to latest WEB frameworks

TOPICS

MODULE I
Web application and java EE 6: Exploring the HTTP Protocol, Introducing web applications, describing web containers, exploring web architecture models, exploring the MVC architecture. **Working with servlets 3.0** Exploring the features of java servlet, Exploring new features in servlet 3.0, Exploring the servlet API, explaining the servlet life cycle, creating a sample servlet, creating a servlet by using annotation, working with servletconfig and servletcontext objects, working with the Httpservlet request and Httpservlet response interfaces, Exploring request delegation and request scope, implementing servlet collaboration.

10 hours

MODULE II
Handling sessions in servlet 3.0: Describing a session, introducing session tracking, Exploring the session tracking mechanisms, using the java servlet API for session tracking, creating login application using session tracking. **Implementing event handling** Introducing events, Introducing event handling, working with the servlet events, developing the online shop web application. **Working with java server pages** Introducing JSP technology, Exploring new features of JSP2.1, listing advantages of JSP over java servlet, Exploring the architecture of a JSP page, Describing the life cycle of a JSP page, working with JSP basic tags and implicit objects, working with the action tags in JSP, exploring the JSP unified EL, using functions with EL.

10 hours

MODULE III
Implementing JSP tag extensions: Exploring the elements of tag extensions, Working with classic tag handlers, Exploring the tag extensions, Working with simple tag handlers. **Implementing java server pages standard tag library 1.2** Introducing JSTL, Exploring the tag libraries JSTL, working with the core tag library. **Implementing filters** Exploring the need of filters, exploring the working of filters, exploring filters API, configuring a filter, creating a web application using filters, using initializing parameter in filters.

10 hours

MODULE IV
Persistence Management and Design Patterns: Implementing java persistence using hibernate Introducing hibernate, exploring the architecture of hibernate, downloading hibernate, exploring HQL, understanding hibernate O/R mapping, working with hibernate, Implementing O/R mapping with hibernate. Java EE design patterns: Describing the java EE application architecture, Introducing a design patterns, discussing the role of design patterns, exploring types of patterns.

10 hours

MODULE V
Web Frameworks: Working with struts 2 Introducing struts 2, understanding actions in struts 2. Working with java server faces 2.0: Introducing JSF, Explaining the features of JSF, Exploring the JSF architecture, describing JSF elements, Exploring the JSF request processing life cycle. Working with spring 3.0: Introducing features of the spring framework, exploring the spring framework architecture, exploring dependency injection & inversion of control, exploring AOP with spring, managing transactions. Securing java EE 6 applications: Introducing security in java EE 6, exploring security mechanisms, implementing security on an application server.

10 hours

COURSE OUTCOMES:
The students shall able to:
• Implement a WEB application.
• Manage deployment configurations are
• Implement Security mechanisms

Text Book:
1. Kogent learning solution: JAVA SERVER PROGRAMMING JAVA EE6(J2EE 1.6), Dreamtech press 2014